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Research Article

Digital Inclusion

Digital Engagement across Socio-Economic Strata among Laundry Workers in Puducherry, India

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The increasing digitalization of India's economy presents new opportunities for informal workers yet also risks deepening existing socio-economic divides. Among these underserved groups, individuals involved in the laundry business represent a significant but overlooked occupational community, particularly in regions like Puducherry, where traditional livelihoods coexist with expanding digital infrastructure. This study explores how socio-economic status influences media behaviour among laundry workers in Puducherry, intending to understand patterns of digital engagement shaped by income, education, and gender. The research is guided by the core objectives of examining how socioe-conomic parameters like gender, education, and income influence access to digital media and exploring the variations in media behavior, defined as the frequency, autonomy, and purpose of media use among laundry workers. The study employed an exploratory survey research design. Thirty-eight samples were collected across various locations in Puducherry for the study using a structured questionnaire. IBM SPSS version 25.0 was used for the Data analysis, and an ANOVA (Analysis of Variance) test was performed to identify statistically significant differences in digital engagement across socio-economic groups. The study finds a strong correlation between socio-economic status and digital engagement. More frequent and independent use of digital media is associated with the higher level of education and income. While gender disparities persist, male respondents show significantly higher media engagement. The results reflect the broader digital inequality patterns.

Keywords: digital inclusion, digital engagement, media access, informal economy, laundry workers

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1. Introduction

The growth of digital technologies has transformed various sectors across India, including the informal occupation sectors. Among these, the laundry business is a distinct occupation for its evolving socio-economic dynamics. As India pushes toward a digitally empowered economy, understanding how this distinct informal occupation engages with media is important in ensuring inclusive development.

The growing interest in the digital inclusion of small-scale occupations, particularly in adopting, adapting to, or resisting technological changes has become relevant in inclusive development. The existing literature on digital adoption and intention often overlooks those engaged in informal sectors (Vaidehi et al., 2021). People involved in these occupations often have to deal with the intersection of traditional practices and contemporary pressures. Their digital intention is shaped mainly by their socio-economic conditions, educational backgrounds, and geographic location (Salonie Muralidhara Hiriyur, 2022).

Media behaviour is often described as an individual's access, interpretation, and use of media content and technologies. Education, income, locality, gender, and occupational status significantly influence the access to technology and the confidence and purpose with which it is used (Chandra et al., 2024). For small-scale business workers like laundry workers, digital tools serve varied functions, like facilitating digital payments through QR codes or engaging with social media platforms for visibility and client outreach.

Since media behaviour is influenced by the complex interplay of technological accessibility, digital literacy, and infrastructural support, it is far from uniform among such groups. Moreover, assumptions about urban areas being inherently more digitally advanced often obscure the nuanced patterns of usage found across different localities and social segments. In the context of Puducherry, a region known for the mix of rural, suburban, and urban settlements, these dynamics offer a ground for exploring how socio-economic status shapes digital intention among laundry workers.

2. Objectives of the Study

This study explores the relationship between the socio-economic status of the individuals involved in the laundry business in Puducherry, India, and its influence on their media behaviour. To reach the desired aim, this study will be guided by two objectives,

1. To examine whether there are significant gender differences in media behaviour among laundry workers in Puducherry, India.
2. To assess how media behaviour varies across different education levels among laundry workers in Puducherry, India.
3. To analyze the influence of daily income levels on the use of smartphones for business purposes among laundry workers in Puducherry, India.

3. Hypothesis

1. $H0_1$ -There is no significant difference in media behaviour between male and female laundry workers in Puducherry, India.
2. $H0_2$ -There is no significant difference in media behaviour among laundry workers at different education levels.
3. $H0_3$ -There is no significant difference in smartphone use for business among laundry workers with different daily income levels.

4. Review of Literature

The laundry business has been an integral part of the informal economy in India, catering to households, industries, and the hospitality sector. In Puducherry, a region cherished for its rich cultural heritage and thriving tourism, the significance of the laundry business is marked. Individuals involved in this business, mostly from underprivileged populations, contribute substantially to the local economy by encountering many socio-economic obstacles (Nigam, 2023).

Thesocio-culturalcircumstancesinemergingcountriesareprogressingtowardseconomicdevelopment (Mishra, 2024). However, these changes are not equally perceptible in all places. The lifestyle of an individual is widely dependent on their economic status. Hence, the person's social position is determined by his/her income. The individual's socio-economic status (SES) is a crucial determinant of their quality of life.

It can influence the access to resources such as education, information, and employment opportunities (Md Monirul Islam & Md. Mustaquim, 2014). Socio-economic characteristics are important tools for measuring human development. It measures an individual or family or a group of people's economic and social position based on education, income, health, and occupation. Socio-economic status is the most important determinant of livelihood as it influences levels of knowledge, skill, and earning capacity for the living of an individual (Md Monirul Islam & Md. Mustaquim, 2014). For workers in the laundry business, SES is shaped by factors such as income, working conditions, family structure, and social support systems. These factors impact their livelihood and engagement with media, a vital component of modern life (Villalba, 2014).

Media behaviour, encompassing the consumption of television, radio, social media, and other platforms, is influenced by a range of socioeconomic factors. Media is a source of information, education, and entertainment, but access to it is often unevenly distributed across socio-economic strata (Alzubi, 2023). Although Technological improvements have significantly transformed media consumption patterns (Sutrisno Sutrisno, 2023), rural India is progressively embracing a hybrid form of media consumption, integrating traditional and digital media.

India's vision for the future is closely tied to technological integration across all aspects of progressive development (Sindakis & Showkat, 2024). The country has already gained recognition in technologically advanced economies in the developing world (Lema et al., 2021). To touch on the country's position today in digital progress, it has been undertaking a series of strategies to provide opportunities for its citizens to utilize ICT (Information Communication Technology) tools(Mukherjee & Narang, 2023).

Inequality in digital communication can occur precisely because of the adaptability, affordability, and accessibility of digital technology. Age, gender, education, income, occupation, and location are some crucial factors that contribute to the adaptability, affordability, and accessibility of digital technology for an individual (Sindakis & Showkat, 2024). According to the Mobile Gender Gap Report, 2021, India has the widest gender gap in internet usage, that caught the attention.

The gendered digital inequality is one of the significant inequalities born out of the triple disadvantages in India. These are the location differences, income differences and interhousehold discrimination (Antonio & Tuffley, 2014).

Education is the other most crucial factor in transforming an individual's socio-economic dynamic because of its immense potential to provide opportunities and experiences to adapt to the changing needs of a continuously evolving society. Education is seen by many as a bridging gap tool and brings equity and equality among the country's citizens ((Jaiswal & Sarraf, 2024). In developing countries where social exclusion is widespread, paradoxical, and harsh, ICT was introduced as a tool for inclusion. However, it could not positively impact the existing problem (Tambulasi, 2009). In addition, scholars also pointed out that households with low education levels own and use ICT assets less than higher-educated households (Tewathia et al., 2020). The southern portion of India is no different in that. The pandemic harshly exposed this already existing inequality.

5. Methodology

This study adopts an exploratory survey research design to examine the digital engagement of laundry workers across different socio-economic groups in Puducherry, India. Due to the limited research on this occupational group, an exploratory approach was appropriate for this study.

The conceptual framework for the study and the variables to be examined were developed using secondary sources including academic literature, government publications, and relevant websites. Primary data were collected using convenience sampling, selecting respondents based on availability and accessibility during field visits.

A structured questionnaire comprising four sections was designed, developed to collect data. These are, Section 1: Work and Business Information: Exploring Professional Background and Business Activities, Section 2: Access to Digital Gadgets and Technology: Investigating Availability and Extent of Technology use, Section 3: Attitudes Toward Digital Technology: Assessing Perceptions and Digital Literacy of Laundry Workers and Section 4: Demographic Information: Collecting basic socio-demographic details of respondents.

Thirty-eight (38) responses were collected from laundry workers across multiple locations in Puducherry, India. Data collection was carried out through direct field visits. Responses were recorded immediately during the interaction to ensure accuracy, clarity, and completeness.

The data were carefully edited to correct inconsistencies, classified for clarity, tabulated to summarize responses, and processed for quantitative analysis. Data analysis was performed using IBM SPSS version 25.0, and an ANOVA (Analysis of Variance) test was conducted to examine statistically significant differences in digital engagement across different socio-economic groups.

6. Results

Table 1: Significant Difference in Media Behaviour by Gender (ANOVA)

Media Behaviour

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	7.296	1	7.296	8.978	.005
Within Groups	29.257	36	.813		
Total	36.553	37			

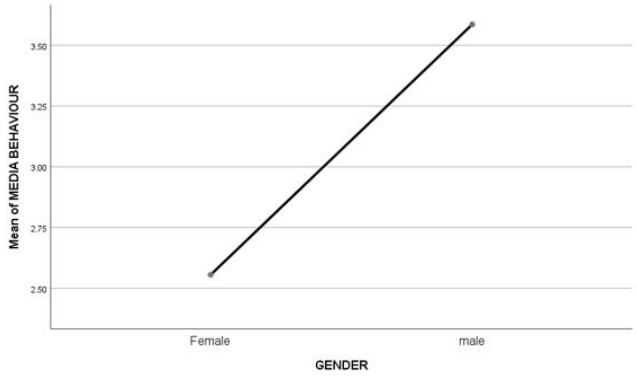

Figure 1: Mean Media Behaviour Scores by Gender

A one-way ANOVA assesses whether media behaviour differed significantly between male and female laundry workers. The analysis revealed a statistically significant difference with F (1, 36) = 8.978, p-value = .005, as shown in Table 1. The result indicates that gender plays a significant role in shaping media behavior, such as choice of media and duration of media usage.

The above graph (figure 1) presents a comparative analysis of media behaviour based on gender among individuals engaged in the laundry business in Puducherry, India.

The vertical axis represents the mean scores of media behaviour, a composite measure of the type of media use and the duration of media use and the horizontal axis distinguishes between female and male participants. The data indicate an apparent gender disparity. Here, male respondents report a significantly higher mean media behaviour score (approximately 3.6) than female respondents (approximately 2.6). The data also reveals that female respondents demonstrate relatively limited engagement and independence in media selection.

Hence, the H01 is rejected.

Table 2: ANOVA Results for Media Behaviour Across Education Levels

Media Behaviour

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	14.869	3	4.956	7.771	.000
Within Groups	21.684	34	.638		
Total	36.553	37			

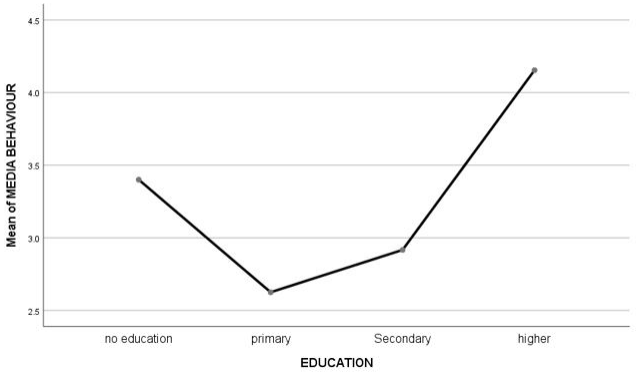

Figure 2: Mean Media Behaviour Scores by Education

A one-way ANOVA was conducted to examine the differences in media behaviour among laundry workers across different education levels in Puducherry, India. The result denoted a statistically significant difference with **F (3, 34) = 7.771, p < .001**, as presented in Table 2. This suggests that media behaviour varies significantly depending on the education level of the respondents.

The above graph (figure 2) illustrates the mean media behaviour scores across four levels of education: no education, primary, secondary, and higher among individuals engaged in the laundry business in Puducherry, India. The vertical axis represents the average level of media behaviour, a composite measure of the type of media use and the duration of media use and the horizontal axis presents the four levels of education.

The graph shows an intriguing trend. Individuals with no formal education demonstrate a moderate level of media engagement. In contrast, those with primary education show a notable decline in media activity, and a clear upward trajectory emerges from respondents with secondary and higher levels of education, indicating a strong positive correlation between the increase in education and enhanced media behaviour.

Hence, the H02 is rejected.

Table 3: ANOVA Results for Smartphone Use in Business Across Daily Income Groups

Smartphone users in business

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	6.200	2	3.100	8.159	.001
Within Groups	13.300	35	.380		
Total	19.500	37			

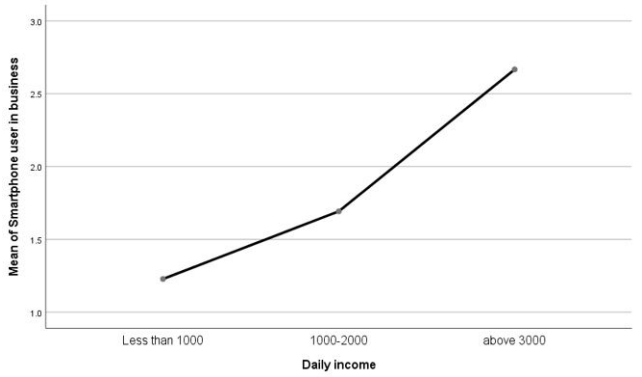

Figure 3: Mean of Smartphone Users in Business by Daily Income

A one-way ANOVA was conducted to determine whether there were statistically significant differences in smartphone use for business purposes among laundry workers from different income groups. The analysis revealed a significant effect of economic status on smartphone use in business, $F(2, 35) = 8.159$, $p = .001$, as shown in Table 3. The result indicates that smartphone adoption in business varies meaningfully across income groups.

A corresponding mean plot (Figure 3) illustrates that respondents from higher income groups reported more frequent smartphone use in their business activities than those from lower-income groups. Individuals with higher income levels exhibit significantly higher engagement with smartphones for business, indicating that economic capacity enables and encourages more strategic use of digital tools.

Conversely, lower-income groups demonstrate minimal smartphone use in business, reflecting potential barriers such as affordability, access, and digital literacy.

Hence, the H03 is rejected.

7. Discussion

The observed result of media behaviour among individuals engaged in the laundry business in Puducherry reveals multifaceted influences of socio-economic status, education, and gender on digital engagement and digital inclusion.

1. Gender-based analysis reveals significant disparities in media behaviour within the laundry occupation individuals. In Figure 1, Male respondents exhibit substantially higher mean media behaviour scores than females. That indicates more frequent and independent use of media platforms, including digital tools and mobile applications. This gender gap reflects broader socio-cultural factors that limit women's digital access and autonomy, such as not owning the device and lower digital literacy. Women's relatively limited media engagement underscores persistent gendered barriers to digital inclusion, constraing their ability to utilize digital resources for business and social empowerment (Deselia & Hariati Sinaga, 2024).

2. Education further complicates this landscape, with media behaviour exhibiting a non-linear relationship across educational levels. In Figure 2, the graph pattern suggests a complex interplay between education and media engagement. Respondents without formal education often rely on functional exposure to digital tools rather than structured learning. Their moderate media engagement is attributed to their hands-on experience with basic mobile phones or digital payments through the audible QR message system or printed QR code out of necessity, not necessarily through deliberate choice. These individuals may have limited literacy but still use technology to meet daily work demands, leading to a pragmatic form of media engagement. The dip in media behaviour among respondents with primary education suggests a transitional stage where individuals may have minimal schooling but lack the confidence and competence to engage meaningfully with digital or media platforms. This group represents individuals of low digital literacy and limited socio-economic resources.

They tend to avoid new forms of media like smartphones in business due to fear of misuse, monetary forgery, lack of understanding, perceived irrelevance, and in some cases, the inability to afford or own such devices. A strong upward trend is observed among secondary and higher education individuals, reflecting how formal education is a gateway to digital literacy, confidence, and independent media usage. Educated respondents display greater autonomy in choosing diverse media types, navigating digital platforms, and using smart devices for personal and professional purposes. They are more likely to access news, entertainment, social media, or digital services relevant to their business, such as digital payment platforms or marketing tools.

The moderate media engagement among respondents with no formal education suggests reliance on practical, experience-based digital exposure rather than formal training. However, the decline in media behaviour among those with primary education may indicate a transitional phase characterized by low digital confidence and competence, potentially due to partial literacy that neither enables full digital engagement nor affords the benefits of higher education. In contrast, respondents with secondary and higher education levels demonstrate markedly increased media activity, underscoring how formal schooling enhances digital literacy, autonomy, and diverse media use, empowering individuals to leverage digital platforms for entrepreneurial and informational gains (Wang et al., 2025).

3. The positive correlation between daily income and smartphone use for personal and business activities aligns with extant research highlighting economic capacity as a critical enabler of digital inclusion (Van Deursen & Van Dijk, 2019). In Figure 3, individuals with higher incomes demonstrate more media engagement, reflecting their ability to afford smartphones, data connectivity, and associated digital literacy resources. Conversely, lower-income groups face pronounced barriers, including affordability constraints and limited digital skills, which curtail their participation in digital platforms for business purposes.

8. Limitation

This study presents important preliminary insights into the media behaviour of individuals engaged in the laundry business in Puducherry, India. However, certain limitations must be acknowledged. The research is based on a relatively small sample size, and participants were selected throughaconvenience sampling based ontheavailability and accessibility. As a result, the sample may not adequately represent this occupational group's broader demographic and socio-economic diversity.

9. Conclusion

These findings highlight the layered nature of digital inclusion among marginalized occupational groups like the laundry workers in Puducherry. Economic status, education, and gender intersect to shape individuals' media behaviour, reinforcing structural inequalities while also suggesting entry points for intervention. The findings also revealed gender-based disparities, where male respondents exhibited greater digital autonomy due to their roles in income generation, At the same time, female members faced socio-cultural restrictions and limited access to technology. Education emerged as a transformative factor, with higher educational attainment associated with greater confidence, access, and diversity in digital media use. Post-pandemic, the gradual shift toward cashless transactions has compelled even informal workers such as street vendors and service providers to adopt digital payment options. These are often in the form of audible QR codes, printed QR codes, or even just a Google Pay number written on paper.

In many cases, the mobile number used for transactions is not linked to an account owned by individuals. This is particularly common among female workers, highlighting the adaptive strategies and underlying limitations of digital financial inclusion in these communities. The results illustrate that digital behaviour among these traditional occupational workers is shaped by infrastructure or device availability and complex intersections of gender, education, and economic roles. The study calls for inclusive, tailored digital empowerment strategies considering these socio-economic dynamics to ensure equitable digital participation.

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